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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,324	03/26/2001	Nancy E. Iwamoto	30-5009 (4960)	1114

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EXAMINER

MAYES, MELVIN C

ART UNIT

PAPER NUMBER

1734

DATE MAILED: 08/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/818,324

Applicant(s)

IWAMOTO ET AL.

Examiner

Melvin Curtis Mayes

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-15 and 22-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-15 and 22-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

(1)

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 27, 2003 has been entered.

Specification

(2)

The use of the trademark Teflon® has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks. It is suggested that the specification be amended to read "polytetrafluoroethylene sold under the trademark Teflon®" since Teflon is not a release agent but a polytetrafluoroethylene material that can be used as a release agent.

Claim Interpretation

(3)

According to Applicant's arguments filed May 27, 2003, conventional "solder paste" comprises a metal or alloy powder, a rosin compound, a rheological additive, a solvent or solvent mixture, a surfactant or surfactant mixture, and/or a buffer or neutralizing agent. Since this is the definition set forth by Applicant for "solder paste" as claimed and Applicant argues that Calhoun does not contemplate conventional solder paste system, the specification should be amended to include this definition, such as on page 4, line 16. Since this formulation for solder paste is conventional, the addition of this definition would not constitute new matter.

Claim Rejections - 35 USC § 112

(4)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(5)

Claims 22-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 22 contains the trademark/trade name Teflon. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or

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trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe a release coating and, accordingly, the identification/description is indefinite. Claim 22 could read “polytetrafluoroethylene sold under the trademark Teflon®.”

Claims 23 and 24 claims that the base layer “further” comprises a fine mesh impregnated with “a thermoset.” Is this fine mesh and thermoset in addition to the thermosetting material or thermoplastic material claimed in Claim 13, or does “thermoset” refer to the thermosetting material of Claim 13? According to the specification, the thermoset of the base layer impregnates a fine mesh. Claims 23 and 24 could read “the base layer comprises a fine mesh fiber material impregnated with the thermosetting material.”

Claims 25 claims that the base layer “further” comprises a thermoset...” Is this thermoset in addition to the thermosetting material or thermoplastic material claimed in Claim 13, or does “thermoset” refer to the thermosetting material of Claim 13? According to the specification, the thermoset of the base layer is intermixed with a particle filler. Claim 25 could read “the base layer comprises the thermosetting material intermixed with a particle filler.”

Claim Rejections - 35 USC § 103

(6)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(7)

Claims 13-15 and 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chung 6,399,178 in view of Calhoun et al. 5,275,856 and Wasulko 5,049,434.

Chung discloses a method for bonding an electronic device to an electronic substrate comprising: providing a B-staged underfill preform; tacking the underfill preform to the electronic substrate; laminating the device to the electronic substrate via the underfill preform; and heating to cure the underfill preform. The underfill preform comprises a thermoplastic-based or thermosetting-based polymer adhesive which is strong and flexible when dried or B-staged to facilitate handling and laminating to a device or substrate but is rigid after curing. The adhesive is loaded with filler such as alumina to reduce the coefficient of thermal expansion and to enhance thermal conductivity. Chung discloses that the adhesive underfill preform can be made to include conductive solder bumps in the same pattern, pitch and position as that of the contact pads of the substrate to which the underfill preform with interconnect by providing the underfill preform with a pattern of holes which are filled with columns of solder paste or solder cream (col. 7 – col. 23, specifically col. 14 – col. 16). Chung discloses forming the underfill preform on a Teflon® release liner (Example 4) and discloses forming the holes in the adhesive for the solder paste by die cutting or photo-etching (col. 23, lines 16-34) but does not disclose applying the

perform to the electronic substrate before peeling the release liner from the perform or forming the holes by lasing or drilling.

Calhoun et al. teach that in making an adhesive web for interconnecting two electrical devices via conductive material in areas corresponding to the electrodes to be interconnected, the adhesive is provided as part of a tape comprising a flexible carrier web that has a low adhesion face, such as papers having polymeric coatings, onto which the adhesive layer is provided. The adhesive layer is separated from the carrier web to bond the two electrical devices. Calhoun et al. further teach that the perforations in the adhesive for the conductive material can be formed by punching or laser drilling and teach that the adhesive web can include not only fillers but also other useful materials such as woven and nonwoven fabrics (col. 2, lines 10-68, col. 5, lines 31-37 and 54-59).

Wasulko teaches that adhesive for attachment of electrical devices to a device substrate is provided as an adhesive transfer system having a carrier film which releasably holds the adhesive. In use, the carrier film is superimposed over the device substrate for transfer of the adhesive and stripped from the adhesive when it is desired to assemble the device on the adhesive. Wasulko teaches that representative support (carrier) films include paper and thermoplastic polymers coated with a suitable release layer such as silicone and fluorocarbon compositions. Wasulko teaches that when the adhesive is transferred to the substrate, the support film functions as a protective release film over the adhesive until stripped for bonding of the device to the substrate (col. 2, lines 35-68, col. 4, lines 1-29, col. 5, lines 23-35).

It would have been obvious to one of ordinary skill in the art to have modified the method of Chung for bonding an electronic device to an electronic substrate by providing the

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B-staged underfill preform on a release liner carrier web for transfer to the substrate for bonding an electronic device such as an IC, as Calhoun et al. teach that an adhesive web for interconnecting two electrical devices is provided as part of a tape comprising a flexible carrier web that has a low adhesion face onto which the adhesive layer is provided and as Wasulko teaches that adhesive for attachment of electrical devices to a device substrate is provided as an adhesive transfer system having a carrier film which releasably holds the adhesive and that is not stripped from the adhesive until it is desired to assemble a device on the transferred adhesive. Providing the underfill preform on a releasable carrier film would have been obvious to one of ordinary skill in the art to provide the adhesive preform with a carrier film which functions as a protective release film over the adhesive until it is desired to assemble the device on the adhesive on the substrate, as taught by Wasulko.

Providing the carrier web as a film coated with a release agent such as silicon or a fluorocarbon such as Teflon®, as claimed in Claims 14 and 22, would have been obvious to one of ordinary skill in the art, as taught by Wasulko, as representative carrier films that can be used to transfer adhesive for attachment of an electrical device to a substrate.

Providing the holes in the underfill preform to be filled with the solder paste by lasing, as claimed in Claim 15, would have been obvious to one of ordinary skill in the art, as Calhoun et al. teach that the perforations in the adhesive for the conductive material can be formed by punching or laser drilling.

Providing the underfill preform with a fine mesh fiber that is thermally conductive and electrically non-conductive, as claimed in Claims 23 and 24, would have been obvious to one of ordinary skill in the art, as Calhoun et al. teach that the adhesive web can include not only fillers

but also other useful materials such as woven and nonwoven fabrics. Providing a fabric that is thermally conductive and electrically non-conductive in addition to filler such as alumina to reduce the coefficient of thermal expansion and to enhance thermal conductivity would have been obvious to one of ordinary skill in the art to further enhance the thermal conductivity or reinforce the adhesive underfill preform.

Response to Arguments

(8)

Applicant's arguments with respect to claims 13-15 and 22-27 have been considered but are moot in view of the new ground(s) of rejection.

Chung clearly discloses providing solder paste in holes in an underfill preform (preform assembly) used to bond an electrical device to an electrical substrate. The use of a release coated carrier film for transfer of an adhesive preform for attachment of an electrical device to a substrate is clearly suggested by Calhoun et al. and Wasulko.

Conclusion

(9)

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

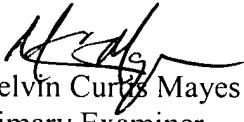
Davis et al. disclose a preform having holes filled with solder paste.

(10)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 703-308-1977. The examiner can normally be reached on Mon-Fri 7:00 AM - 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Melvin Curtis Mayes
Primary Examiner
Art Unit 1734

MCM
July 29, 2003